Rec' Apl 12th
An Sept 17

Canon City,
Fremont County,
Colorado
Apr. 7th. 1873

Dr. George Englemann

Dear Sir, At the suggestion of Prof. Thos. C. Porter I write to you — I have been living in Colorado for the last two years and have become very much interested in the flora of the Rocky Mts.

My collection of Southern Colorado Plants named by Prof. D. C. Eaton, Prof Thos. Porter & Mr. J. H. Redfield now numbers nearly 600 species — But I have done nothing with the Cactaceae — I do not know how they should be preserved & have nothing relating to them except the little in Clarence King's Report — There are a great many, (more than a dozen) species about here and I should like to study them up this summer — I should very much like your Synopsis of the Cactaceae —

If you wish any plants from this part of the country I shall be very glad to send them to you

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I am expecting to collect a great ~~many~~ deal this year and it will be very little extra trouble for me to give you any thing you may wish

Yours truly,

T. S. Brandegee
Cañon City
Colorado

Rec. [illegible] Aug 25
Ans — — 31

Canon City - Aug. 24.

Dr. Geo. Englemann

Dear Sir: Sometime ago I recvd. a letter from you telling of your intended visit to Colorado. I am very glad that you intend to make Canon City a visit and know you will find much to interest you - I am very much obliged for the pamphlets on Cuscuta and Cactaceae —

The questions of your letter can be better answered when you come to Canon City and see the growing plants themselves.

Yours truly,
T. S. Brandegee

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Recd Nov 3d
Ansd Nov 11
A. Menziesii ?
Engelm ?

Canon City, Colorado
Oct. 30th 1874

Dr. Geo. Engelmann,

Dear Sir, Yesterday I recvd. a letter from you together with some pamphlets. I am very much obliged to you for them and the specimen of Abies Concolor which Mr. Putnam brought to me ——

The day after I recvd. the Abies concolor I walked over to Oak Ck. Canon to look at an Abies I had often seen there and admired but never collected specimens from — It was the same as your Glen Eyrie tree and I immediately sent cones and branches to Prof. Porter labelled. A. concolor — About two dozen trees are growing in the lower end of the Canon with Pinus ponderosa and Abies Douglasii — They grow in the bottom of the Canon by the side of the water generally, but three or four are on the sides of the Canon 50 or 60 ft above water — They are of all heights between 20 and 40 feet

The cones grow at the very top of the tree and at that time, about the first of October were falling to pieces, seed and scales separating from the axis ——

I rode through the Canon yesterday and nothing was left of the cones except the axes which were plainly to be seen

No A. concolor grows at the upper end of the canon — Yesterday I recvd a letter from Prof. C. S. Sargent asking for seed of A. concolor for the Cambridge Botanic Garden. I sent him some cones which I had gathered for botanical specimens

The oxytropis which I gave you has been named by Prof. Porter O. Coloradensis — The Actinella, he has reconstructed to A. Brandegei

The Crepis? has not yet been settled

I have been so busy of late that I have not yet had time to send either you or Dr. Gray the Cacti — But I will not be so busy always and when I do send will try to have specimens of the wood of Abies concolor — I have marked the locality of A. concolor on the enclosed map

I send you some oak leaves from the vicinity of the Coal banks

Quercus Emoryi, south of Canon in the Greenhorns has its leaves longer and narrower than up at the Grand Canon —

I notice that Q. Emoryi retains its leaves longer than Q. undulata Some are as green now as at any time — The large broad leaves enclosed in letter grow near the Coal Banks, I have seen none of them in the mountains.

Mr. Putnam is as well as usual and is now boarding with Mrs. Sheets who has moved into the new hotel

When I went to that well in order to get the temperature of its water I found it dry, not a drop in it

Remember me to Mrs. Engelmann

Yours truly,

T. S. Brandegee

Probably A. concolor can be found in Hardscrabble, Adobe & Newlan Ck Canons

Rec Dec 1st 1874
Ans Dec 20

Brandegee

Canon City,
Nov. 27th

Dr. Geo. Engelmann,

Dear Sir: I recevd. your last letter some time ago. Since my last I have been to Rosita twice, over the Oak Creek Road, through the Abies Concolor & Quercus Emoryi country

Some trees of A. concolor are 60 to 70 feet high — The younger trees those up to 20 ft high have a smooth light colored bark about the color of the bark of Populus tremuloides

Older trees, those of about 40 to 50 feet high have a rough bark for the first 20 feet — The large old trees 60 to 70 feet high are covered with the rough bark to the top

I have found another? Abies which grows at a higher altitude than concolor — One specimen, from Rosita, 9000 ft, has leaves longer than A. Concolor — perhaps it is the long leaved Abies of Mr. Knapp. The Shorter leaved specimen is from an altitude of 8500 ft — Both these trees had ~~shed~~ lost their scales and fruit from the cones. The axes of the cone were remaining in the tops of trees The leaves do not seem to quite answer the description of A. grandis. I can send you larger & better specimens if you wish them. I have a piece of wood of A. concolor which I will send some day.

Pinus ponderosa began to drop its seed about the first of October The cones are now all wide open A week or more ago, that tree of Juniperus occidentalis had lost about one half of its berries which were on the ground - Those remaining were shriveled - Many berries are on the ground under the trees every place but some trees yet hang full

The oak leaves were gathered on the
Oak Ck road Nov. 25th

Half of the bushes of Quercus Emoryi are yet green - Plenty of bushes of undoubtedly as good Emoryi as these are now covered with only dead & dry leaves — No Q undulata is green. One patch of Emoryi will be green and the adjoining patch dry - A patch that is green will have no dry ones intermingled

Those large oak leaves sent in my last letter are not from sterile shoots but are the leaves of a variety common about the coal-banks.

Dr. Gray calls Prof. Porter's Oxytropis Coloradensis - O. podocarpa - that Baccharis B. Wrightii - recognizes Actinella Brandegei as a good species and says that that Crepis? is C. nana as sure as a gun. What do you think about it? I have been away from Canon so much lately that I do not know much about it. I have seen very little of Mr. Putnam lately but know that he is getting along all right. Dr. Briggs, I suppose has gone to California. I heard that he had lost his voice.

The only Coniferae within 20 miles of Canon City are Pinus edulis, ponderosa — Abies concolor, Douglasii and the one spoken of in the letter, Juniperus occidentalis & Virginiana. Some other grow in the Sangre de Cristo but I have never collected them

with pink string = long leaved A. grandis?
9000 ft Rosita (Scales tied with pink string in paper
with no string = short leaved A. grandis
8500 ft

with white string A. concolor
6500 ft

loose scales belong to short leaved A. grandis?

T. S. Brandegee

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Rec May 20th 1875
Ans Jun 4

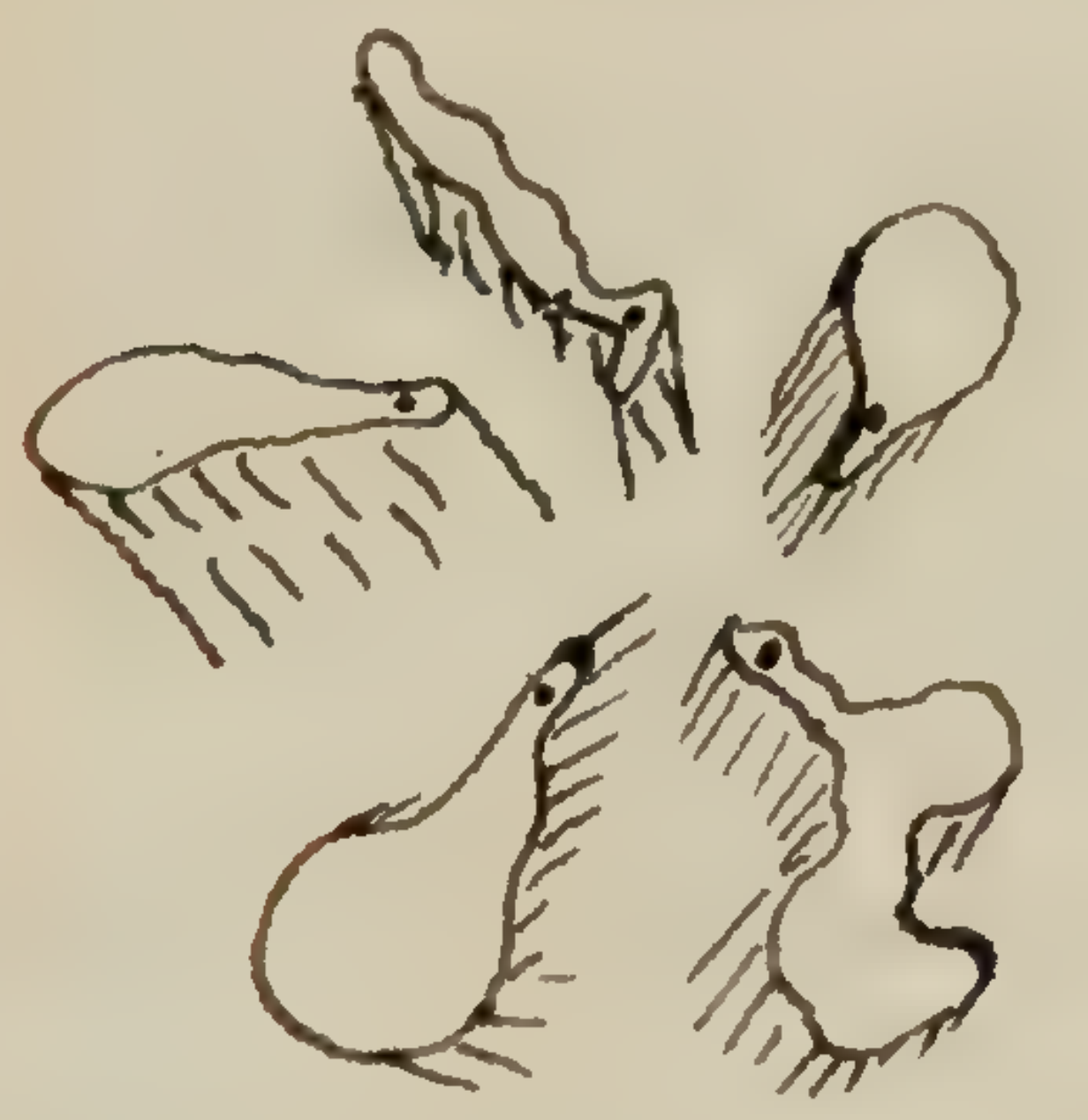
Canon City,
May - 16th..

Dr. Geo. Englemann,

Dear Sir, I have recd. your letter & Postal card and will answer your questions as well as possible —— Our grape has its new branches now full of buds — the new shoots are invariably downy or cottony (floccose) The leaves have appeared upon Quercus —— Gunnisoni — I have noticed quite a number of patches of Gunnisoni that retained their old leaves even though the new ones were quarter grown —— I have not seen much of undulata lately - but it seems to be more backward that Gunnisoni — those that I have seen retained their dried leaves and had new leave just appearing Cereus phoeniceus is in blossom, but — gonacanthus is not — The more I look at them, the more I am inclined to

think them varieties of the same species
Echinocactus Simpsonii
~~Mammillaria vivipara~~ is in blossom
in the town gardens

Juniperus occidentalis generally sends up several trunks from one root - these lean outward from the center - the side of each tree trunk toward the center lacks bark and is narrow - the central ring is close to this no-bark side — This drawing represents a



cross-section of a clump of J. occidentalis — the dots represent the central ring

I have found one or two trees that were twisted and in that case the no bark side is twisted also ~~so~~ as to come upon the out side - but this condition is very uncommon. Sometimes - perhaps one twentieth of the trees grow erect with only a single trunk — then there is no side lacking bark and the cross section is more nearly symmetrical - Such a

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tree was the one I sent you

They grow nearer water and in a sandy soil — not among the rocks and on the dry bluffs; the favorite place for J. occidentalis. ———

I did not mean to say that — occidentalis does not burn well — When it is cut for stove wood — that is into small sticks it splits up into shreds and slivers — for that reason it is not very much used here — ——

The cedar posts brought into town are every ~~one~~ J. Virginiana — J. occidentalis is used for "post fences" — fences made by digging a trench and setting posts upright close together

Some trees of J. occid still hold their mature berries — and J. Vir. also. Some trees of J. Vir. seem to be as full as ever of berries with perfect ovules I saw one J. V. tree yesterday 3 – 4 feet in diameter full of berries and

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three quarters of the berries had two ovules — I am curious to know where next winters crop of berries is to come from — I can find no immature fruit — Are you "well posted" in regard to Mentzelia — Canon City M. multiflora seems to be mixed up —

Two species are called M. multiflora You collected the late flowering M. multi=flora — it is biennial or triennial — that is it dies after blossoming —

The Abies Menziesii represents the tree I spoke of in one of my previous letters as growing along the South Park Road north and west of Pikes Peak — I also sent a few scales of Pinus flexilis from same locality —

I think Canon City is a good winter resort for consumptives — I think they will live longer here than in the East — But if any consumptive comes here they must stay — to return East is sure death — Many persons have so much improved as to think themselves well and have returned only to die in a short time

This has happened often when there was no reason but that the person would probably live many years out here

Our winter was "hard" and carried off many reconstructed invalids. Mr. Putnam has returned East but I have not heard from him since he left — I do not suppose he can live very long

Yours truly — T. S. Brandegee

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Rec March 29th
Ans April 15

Canon City,
March 25th.

Dr. Geo. Engelmann,

Dear Sir, I have but recently returned to Canon City, having been away surveying a township north from here – I was gone a month, – on my return I recvd. one of your letters and since then another has arrived and also the Cactus Reports which reached me safe – I thank you very much for them – You lecture upon "the Forests of Colorado has not reached me

While absent from Canon I went down to Col. Springs – around west and north of Pike's Peak – The South Park Road down to the Ute Pass Road is lined with Abies Menziesii – I have never noticed this Abies before It certainly is not common in Fremont County – it may grow in the Sangre de Cristo – Abies concolor is plenty down the Ute Pass Road to within a mile

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of Manitou - A. Menziesii descends to within about 500 feet altitude of A. concolor on the Ute Pass Road

I saw A. Menziesii as low as 8000 ft — In Rosita, as I have before written you, A concolor grows at 10.000 but I saw no A. Menziesii there. I met with no J. occidentalis during my trip - only J. Virginiana and communis — and with no oak of our Quercus Emoryi form —

Thanks for your specimens of Arizona Oak - I do not think I can find that form of oak about here but I will keep a sharp look out ~~next~~ this year

"The oak leaves in the little package will show you the present status of our Q. Emoryi? - they were gathered from the bushes yesterday - The leaves are loosing their green color more of less - The bushes having ovate, elliptical, leaves with nearly

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an entire outline will soon be
without a leaf — they drop off
very easily – but those with deeply
incised small leaves will keep them
some time yet — the forms of leaves
represent those of clumps of bushes —

My Emoryi Locality near Canon
is on the Southern Slope of the moun=
tain across the river north of the Hot
Spring – the mountain side is full
of it — but one or two clumps of
Q. undulata grow there and they
in damp canons – Our Q. Emoryi
always grows in Rocky Localities
Dr. Rothrocks do not seem to differ
from some forms of Emoryi in pubes=
cence and consis~~tency~~tence but they certainly
do in Color — The cross section
J. occidentalis is nearly always irreg=
ular – often the central ring is close
to the outside. — I think it would be
very difficult to find a perfectly

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symmetrical cross section of J. occidentalis — J. Virginiana is regular and I notice is selected by wood choppers cutting good cedar posts ——

I have been unable to detect any difference in the maturity of the berries of J. occidentalis — a few are yet remaining on the bushes and yesterday I picked some which you will find in the letter. Our Cacti have not suffered any during the cold weather — Mr. Redfield says he can not find any description of Panicum (Setaria) caudatum — Mr. Elihu Hall says that grass is exactly what Dr. Gray named in his Texas Collection Setaria viridis — Mrs. Sheetz wishes to be remembered to you & Mrs. Engelmann — Mr. Putnam is round about but is, I think weaker than at the beginning of the winter

Yours very truly
T. S. Brandegee

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Rec June 7th
Ans — 8th

Canon City,
June 2nd
1875

Dr. Geo. Engelmann

Dear Sir; Next week I expect to start for south western Colorado and New Mexico with a division of Hayden's Expedition — I am to aſsist the topographer and collect plants as I have time

Any thing you would like, I think Dr. Hayden would have no objection to ~~my~~ me collecting it for you —

I will keep a sharp lookout for the coniferae and oaks

I have not had much time since the grape came into blossom but may have an afternoon this week to look at it — Some of the vines are staminate only — those having pistils, have the stamens bent around under as far as I have seen. Letters sent to Canon City will reach me

Yours truly.
T. S. Brandegee

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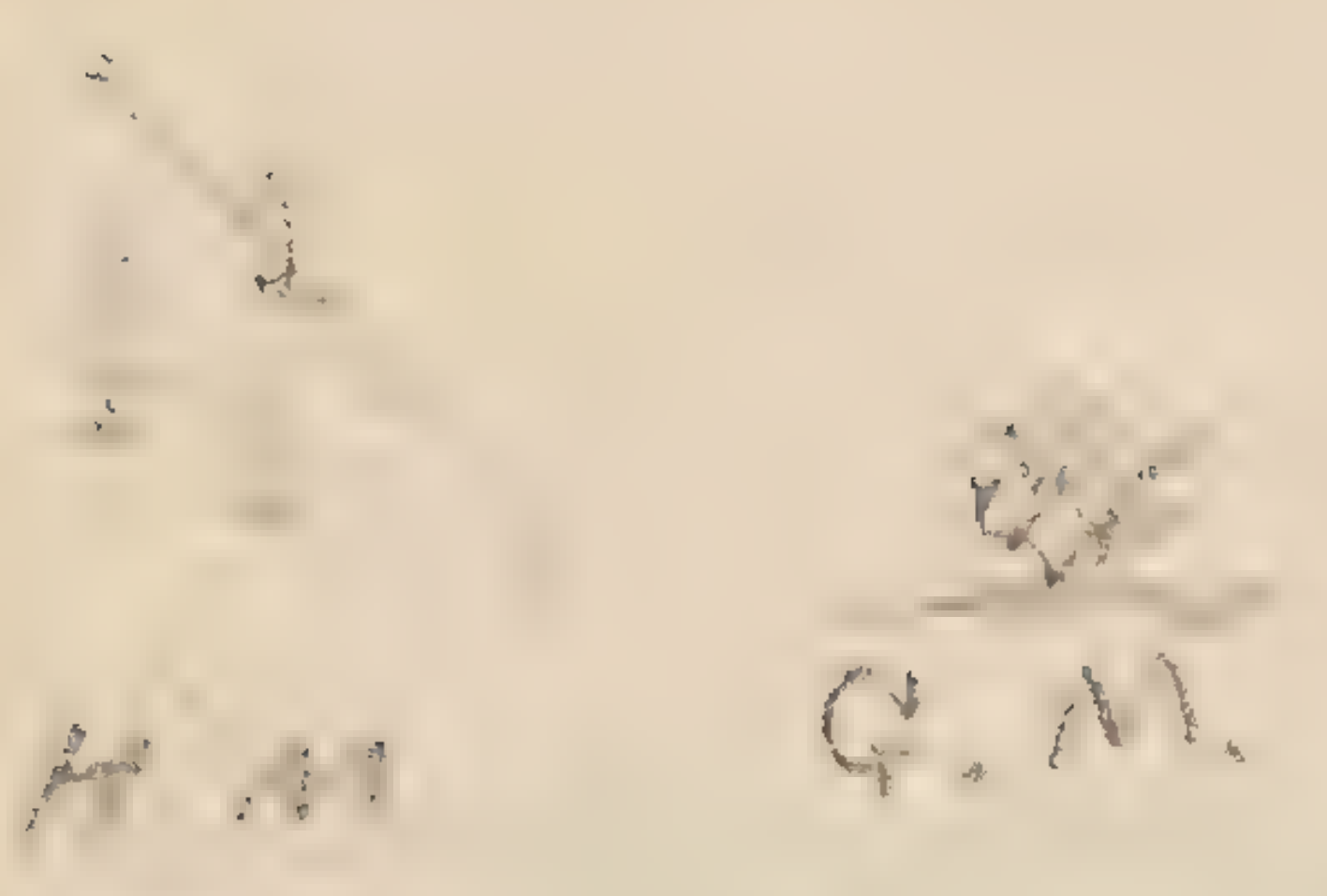
Rec Aug 10th
1875

In Camp on the La Plata
at the base of the La Plata
Mts July 25

Dr. Geo. Engelmann

Dear Sir - Two days ago I rec'd the first mail I have received since leaving Cañon, I received the letter from you of [illegible] with queries about Mentzelia - I have watched those Mentzelias very carefully and will begin the letter by writing the results of my observations on the Gorge Ck. M. & the Hogback M. The G. M. is perennial. The H. M. dies after blooming - The G. M. sends up many stalks from one root which grow into an entangled mass - The H. M. sends generally but one single stalk from a root - Both are vespertine - H M has radical leaves - G M blooms early in the summer and the above ground part soon dies - H M blooms late in the summer - H M has more seeds than G M. (I remember in a ratio of about 30 to 50 - H M grows on steep slopes of soil - G M on broken rock —



We crossing the Range on the south by the Mosca Pass went up the Rio Grande over the range on to the Los Pinos - to the Piedra to the Los Pinos - to the Florida to the Animas - to the La Plata - to the San Juan - to the Mancos - to the Dolores & [illegible] and to here for supplies — First Cactaceae I collect only what is new to the flora of Colorado South of Pueblo - a Cereus resembling somewhat C. viridiflorus but with large woolly buds and red flowers — In this region - an Echinocactus; with the central spine like a fish hook - out of flower large specimens 9' high & 6" in diameter - A cylindrical Opuntia - one foot high, spreading over the ground - flowers yellow. Looks like a small branching form of O. arborescens ———

No O. arborescens here - the Cereus viridiflorus, [illegible], no O. arborescens but all other Canon City Cactaceae.

Hundreds of square miles of I.

occidentalis grows here — very little
J. Virginiana and many J. communis
J. occidentalis resembles the Canon
City in having dense and more forest
and generally irregular branches.
The leaves have double the diam-
eter and consequently 8 times the
volume — Abies Engelmanni is the
most common Abies, growing in
forests under [illegible] extent. A. Menziesii
grows along streams below A.
Engl. generally — Pinus ponderosa,
edulis & A. Douglasii are plenty
A. concolor grows in [illegible],
how can I distinguish? — On the
Pinos A. grandis? occurs where
[illegible] [illegible] [illegible] this
the tree with Aspen & other [illegible]
about their [illegible] from [illegible] [illegible]

I found Actinella Brandegei on
the Los Pinos Pass and in the La Plata
1885 — The Oak is all Q. Gunni-
soni — The flora in the corner
of the territory is Arizonian & New Mexi-
co — I dont know what [illegible]

A new Yucca with broad leaves – branching
flower stalk and large sharp pointed
pod – plenty of new Malvaceae and
Eriogonum – strange Rosaceous shrubs
a large Philadelphus – new Aplopappi
& Helianthi – A splendid Abronia with
winged fruit – "Fraxinus?" along the streams
An Actinella resembling scaposa, but
leafy stemmed and stems sometimes
with three heads – A bushy Gaura &c.
On the Rio Grande, I found a yellow
Polemonium – I enclose fragments of
specimen Corydalis? which I found
on the side. of the Pecos at 11,000
ft. alt. – it was just coming into blossom
so I could get no better specimens than
those I send you – they have would
not come here well in the packages,
with the rest of my specimens

? This Corydalis grows from ft
length leaf at base two to
three ft high – decompound
stems hollow, one inch in
Corydalis ? diameter – Spike of flowers
ft. or in length, flwrs. yellow tip'd
& shaded with purple. It grows

in a great many localities — for its foliage & flowers it is a very desirable plant in cultivation.

The innermost spines are the central spines of that section.

No better specimens of the Coryphantha can be had —

Yours in haste

M. S. B[illegible]

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I am much obliged for the seeds & scales of Abies grandis

Those fragments of A. concolor came from Lucille Hill, above Rosita. Rosita is 9,500 - So there is no doubt that A. concolor grows at an altitude of 10.000 ft

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and how much higher ¿quien sabe? – When I go into the Sangre de Cristo next year I will see

See also our friend's
[illegible]
what do you mean by [illegible]

Rec Sept 6th 1875
Ans same day

Aug 21
[illegible]
[illegible]

Dr Geo Engelmann

Dear Sir

[illegible]

[illegible]

[illegible]

Also [illegible]

[illegible]

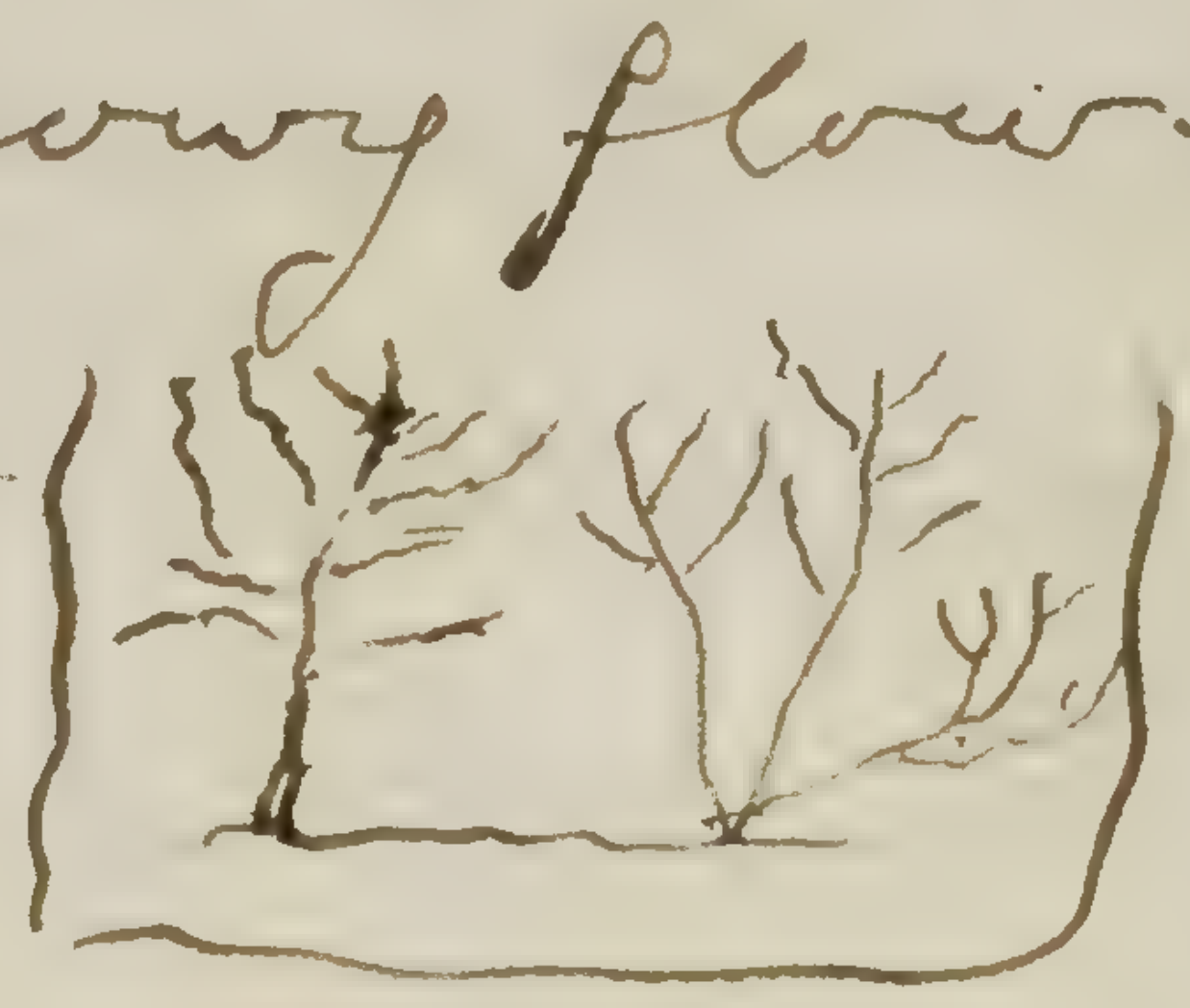
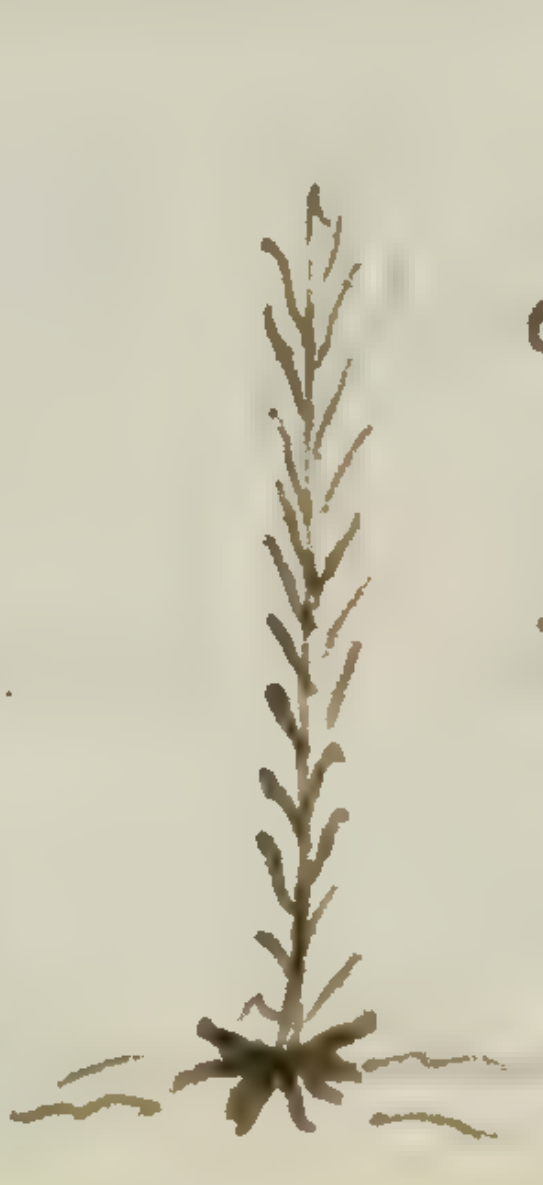
Yours truly

T. S. Brandegee

Rec^d Sept 27 1875
Ans same day
(1)
Canon City
Sept. 23rd

Dr. Geo. Engelmann

Dear Sir — I am back again in Canon City, in spite of Indians, rattlesnakes and tarantulas &c.

First Mentzelia — Torrey and Gray's Flora call M. nuda vespertina — the hog back and Grape Ck Mentzelias open late in the afternoon so I call them also vespertina. The hog back M. is golden yellow — Grape Ck cream white as you say — M. nuda about Canon is perennial but in Wt. Mt. Valley there is a Mentzelia which I can place nowhere except as a truly biennial M. nuda. The Hog Back M is biennial and never perennial, the Grape Ck is always perennial — M. ornata is always biennial — In Southwest Colorado I notice but two Mentzelias (Perhaps M. albicaulis which is both annual and biennial may have passed flowering) — one I think may correspond to the Hog Back M. and the other comes near to nuda — My plants have not arrived yet so I have not had a chance to examine carefully — The one resembling nuda is biennial but to the sight differs in high narrow growth and shortness of the lateral branches and not showy flowers — M. nuda in Fremont Co look like this —  The La Plata M — like this  and grows to be five feet high — while riding down the Mc Elmo at dusk the air at one time became filled with perfume - riding on one hundred ft or more I came upon a plant, a Mentzelia in full blossom, the M. which I imagine may be the Hogback M. - M. ornata is also as fragrant as a tuberrose when opening its flowers

The large winged Abronia I spoke of may be A-cycloptera - A. cycloptera as named so from Fremont Co. is very different from the San Juan A. cyclop. The Fremont Co one grows prostrate, has large thick stems and insignificant flowers - The San Juan one is erect and branching - flowers very showy, double the length of A. fragrans - I will examine both closely when my plants get around

I have been looking over the Cacti a little - the Pueblo one, Dr Gray sent you seems to be C. caespitosus as you say - The plants are always single and the bud very large for the size of the cone - The grass=hoppers were ~~so~~ numerous that to find open flowers was impos=sible - When specimens arrive will send you the best I have of the fish hook one and of O. echinocarpa ? The fish hook cactus may be either a Mamillaria or Echinocactus, I dont know which - It blossoms very early in the season and the blossoms are crowded at at the summit - I will have specimens of seeds &c - The central spine only is a fish hook - I had expected to find more Cacti than I did - there are very few Cacti in S W Colo - not as many as about Canon City

Canon City seems to be quite rich in Cacti as well as in Mentzelia – No Opuntia arborescens in S.W. Colorado – and I am not certain that any O. missouriensis grows there – O. Rafinesquii Camanchica grows there quite commonly – reproducing the Canon City forms and some new ones. There is a var. of Rafinesquii which to the sight looks like O. Missouriensis and is hardly distinguishable from it except by the fruit – O. Raf. Camanchica on the La Plata and Mancos at the base of the Sierra La Plata (alt. 9000) becomes stunted, the joints become nearly cylindrical and only 2 or 3 inches long but it is plainly O. Camanchica in flower & seed whenever it is vigorous enough to flower. I saw Cereus Fendleri in the Mancos Canon also Cereus phoenicius – no gonacanthus forms – Cereus phoenicius & gonacanthus ~~run together~~ are connected and are varieties of one species I think – Echinocactus Simpsoni abundant on Le Late and in the Carrizo – plenty of Mammillaria vivipara – no viridiflorus

When I found that Corydalis no ripe seed had formed and it was only by careful search that I could collect as perfect specimens as I sent you – We returned by a different route; up the Animas and down the Rio Grande, upon which none of that splendid Corydalis grows

I saw none of the large berried Juniper except between the La Plata and the Animas – I expected to meet with it throughout our whole district so neglected to gather specimens – The Juniper west of the La

Seemed to me to be J. occidentalis and to have no berries this year — now and then a few last year's fruit would be upon a tree and it did not differ apparently from Canon City J. occidentalis — I do not think J. occ. in Fremont Co. has ~~born~~ matured any fruit this year and this is the case with Coniferae in general as far as my experience goes — excepting those large berried La Plata Junipers; they were loaded with berries that would mature this fall — The berries were very white with bloom ~~affec~~ I have not been able to find a single Abies grandis or concolor bearing cones — no seeds fruit of A. Engelmannii, Douglasii or Menziesii nor of Pinus ponderosa or flexilis

Pinus flexilis grows on the La Plata. One young tree had last years cones 8 to 10 inches in length ——

It is also the non-bearing year for Yucca — more especially for Y. angustifolia

I think the Pacific Slope Abies? is all A. grandis I send you specimens gathered from lower branches and a few old cone scales which will settle the matter — The cretaceous sandstones come up on the mountain slopes on the western sides to 9000 feet and that is not a good state of affairs for A. concolor. Most of the concolor I have seen grows in the Metamorphic sandstones excepting at Rosita where it grows I think on Trachyte. Coming home over the Musca Pass (Sangre de Cristo) 9500 I saw again undoubted concolor and

noticed the great difference between it and the
3) 3 S.W. Col. Abies — The trees on Mosca Pass have
a very rough bark, long heavy leaves &c those on the
Pacific Slope although much larger trees, have no
rough bark and the leaves are shorter, thinner and emarginate — No cones this year — On the very summit of Mosca
Pass an Abies concolor grows and on both slopes trees
can be seen — Pinus flexilis is the prevailing conifer
on the Mosca Pass — Abies Engelmanni is the
conifer of the western slope — perhaps out numbering
all the others put together. I saw the tree which has
been the cause of so much Indian trouble, the tree
which Ouray showed to his braves as the tree which
would be the boundary between "Ute" and "Americano"
but which in reality is many miles out of the way
It is "blazed" and marked with two concentric red
and blue small circles — Perhaps you will not be
pleased to know that the troublesome tree is an Abies
Engelmanni, a magnificent one large and tall
I have been unable to find the abies grandis cone scales on
account of so many papers of mosses done up in a similar
manner but will run across them some time — I send some
seeds of the Yucca baccata — the leaves are filamentose
Y. angustifolia grows at a lower altitude than
Y. baccata — I have seen no oak, excepting a few
low bushes bearing leaves with acute lobes) which differed
from Q. Gunnisoni — No Vitis in S. W. Colo.

Galium California

I expect to make a fine display of new species in a Bulletin Report — already I have the following with more than 200 species to be studied

Actinella Brandegei
Draba ———
Corydalis ~~Caseana~~
Polemonium ———
Grimmia Rauii
" Brandegei
Weisia Brandegei
Gymnostomum Coloradense

S.W. Colorado is a dry country and was very dry this summer — but since we crossed the range for the last two weeks it has rained upon us every day — Eastern Col. complains of too much water — A storm last week carried away all the bridges between here and Pueblo — Canon City has had no railroad communication nearly all summer and at one time no flour &c was to had in the place — The plants collected on my return trip I have with me — I found many more than I expected, considering it was Sept. — The last plant collected was Hoffmanseggia Jamesii near Pueblo in flower & fruit — I found several Gilias & Phacelias — a Hymenantherum one inch high, a matted caespitose small Galium — ~~the~~ corolla generally 3 lobed, white, leaves four in a whorl — I put some in the letter which will be better than writing — A low alpine Machaeranthera attracted my attention — flowers large showy 2in in diam. plant 2 or 3 inch. high but I have not looked at it yet — I am sorry about not having specimens of J. Utahensis but you must remember that an assistant topographer must work pretty hard in order to do anything at Botany

Remember me to Mrs. Engelmann — Yours truly T. S. B.

Rec Oct 18th
Ans — 22'

Berlin, Conn.
Oct. 13th

Dr. Geo. Engelmann

Dear Sir, I am now at home on a visit and have all of my this year's collection. In Denver I found one of your letters, the one written before the last — In this letter you will find the best specimens of those two S. W. Colorado Cacti. The opuntia has a yellow fruit and does not seem to be Echinocarpa — I meant to say that Yucca did not flower this year.

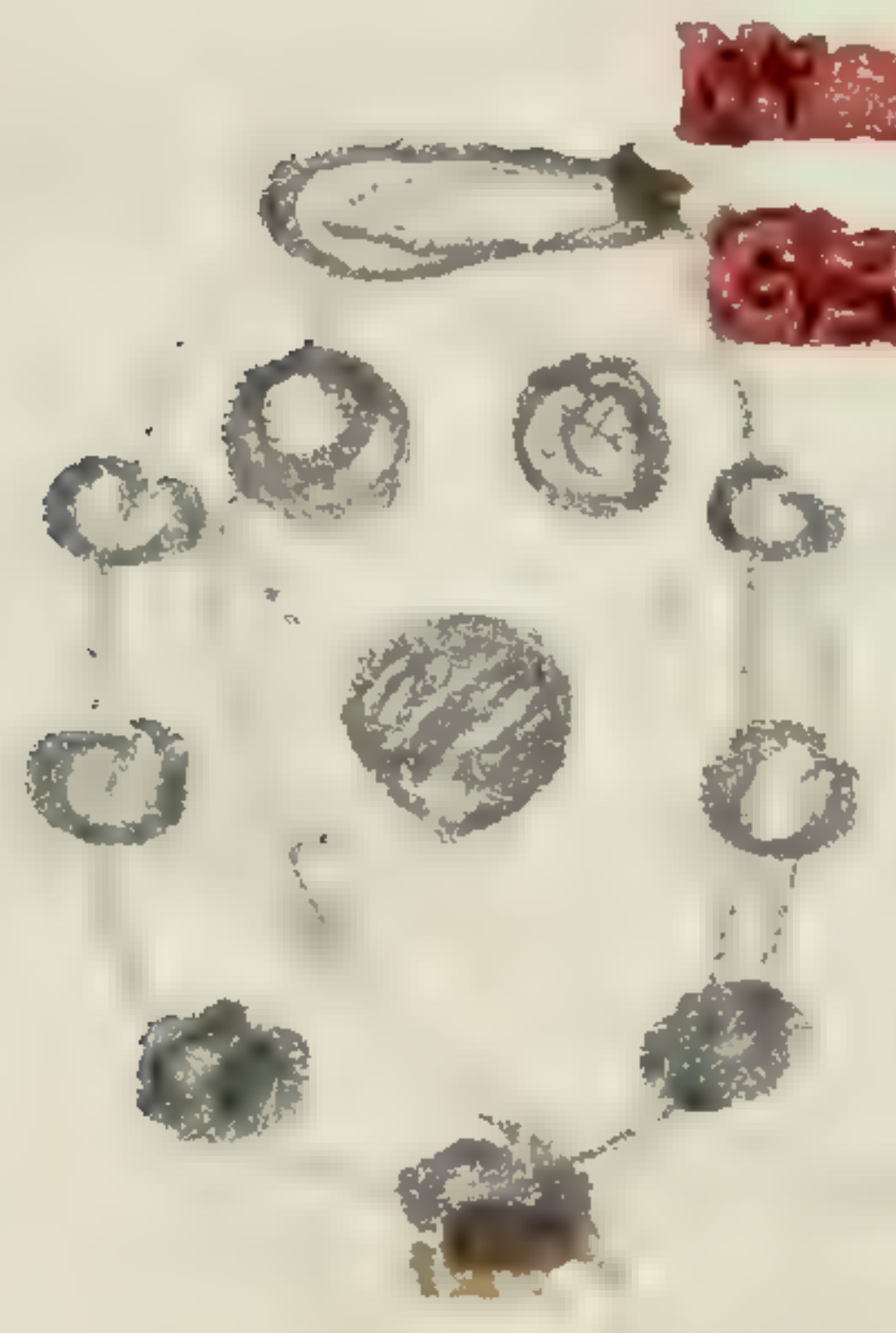
Mr. Watson in his report says "These three forms (occidentalis, communis & Virginiana) probably include all West of the Mississippi*" —

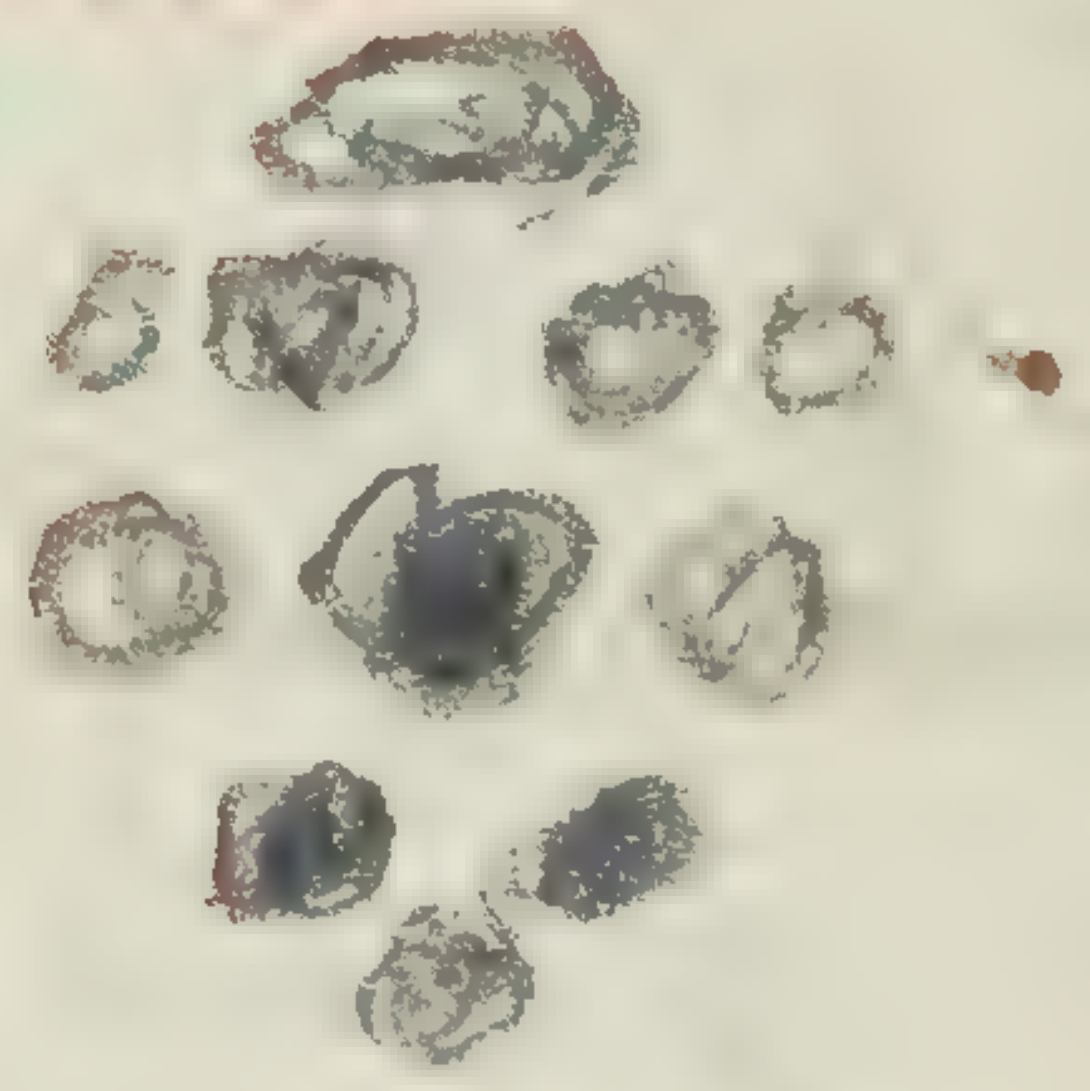
While in Canon, I collected some good specimens of those two Mentzelia's — Would you like some and also S. W. specimens

The wet Summer weather had brought out multiflora late in the season — Many flowers were in blossom around Canon when I left — Hymenantherum aureum was very abundant represented by hundreds of ~~species~~ plants where last year was but one or two — I will send you Yucca seeds and Arceuthobium in a short time Mrs. Sheetz wished to be remembered to you

Yours very truly
T. S. Brandegee
Berlin
Conn:

Op. 3 green [illegible]
+40 over sepals
8 petals





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MISSOURI BOTANICAL GARDEN

Rec' Dec 4th
Ans — 20

Canon City,
Nov. 24th

Dr. Geo. Engelmann

Dear Sir; I send you some of our weather reports There is another well 80 feet deep that I will take the temperature of as soon as possible — But I have no time as I am busy every day surveying

I saw Mr. Putnam today & he handed me a note from You He seems to be very well —

To-day is a little too hot for comfort

Yours truly

T. S. Brandegee

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~~443~~

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Rec^d Dec 10th 1875
Ans Jan 2^d

Berlin, Conn.
Dec. 7th.

Dr. Geo. Engelmann

Dear Sir, I have been so busy visiting my friends and studying my plants that I have not found time to answer your last letter — The Echinocactus Whipplei certainly came from S. W. Colorado and it is quite common there —

The cylindropuntia has yellow flowers and the ripened fruit is yellow — The plant spreads over the ground, not reaching the height of two feet — like this

The enclosed specimens of fruit are the best I have Next week, I will try to send you by mail Canon City & S. W. Col. Mentzelia's and some specimens of the Arceuthobium & Juniperus. Yours truly,
T. S. Brandegee

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Rec. Dec 13
Ans Jan 2

Berlin. Conn.
Dec. 10th.

Dr. Geo. Engelmann,

Dear Sir, Today I have sent by mail the Mentzelia's with some Arceuthobium and Phoradendron

1281 = S.W. Col. M. multiflora that is it seems to be the same as Parry's plant from Southern Utah so named

G = the Grape Ck M. and is from Canon City collected in Oct. 1875 multiflora

H = Hog back M. and is from Canon City — Oct. 1875 chrysantha

1243 = S.W. Col. Mentzelia

2 to 4 ft high nuda biennial, rosulate leaves at base of each plant — strict — flowers smaller than nuda — altitude 8000 ft plenty of it grows there

Yours truly T. S. B.

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Rec'd Jan 17
Ans — 19

Berlin, Conn
Jan. 12 - 1876

Dr. Geo. Engelmann,

Dear Sir, I was very glad to hear from you again and very sorry to learn that you have been sick — The Canon City Mentzelia multiflora was quite golden yellow last September — I never before saw it in blossom as late as that — the rainy summer and the spring grasshoppers caused the late flowers and perhaps, in consequence, the chrysantha color of the flowers M. multiflora is of a lighter yellow than M. chrysantha — I never saw any M. multiflora as yellow as those late Canon City specimens

The Opuntia Whipplei? is very plenty over in S. W. Colorado and could hardly have been overlooked by Dr. Newberry on McComb's Expd.

I met Mr. Meehan at the Philadelphia Acad. and we talked about Abies concolor — but from what you write, I think we misunderstood one another — I thought Mr. Meehan said that he found both A. concolor and grandis about Manitou and I assured him that only concolor grew about Manitou

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which is a fact, Of course grandis grows in Colorado, whole forests of it are on the western slope in S. W. Colorado, where I did not see a single concolor —

And very different from one-another are the old trees of the two species — The large old trunks of grandis are always comparatively smooth while those of old trees of concolor are very rough like Pinus ponderosa —

I collected seed of M. chrysantha last year and distributed it as M. multiflora to Dr. Gray - Mr. Thompson of Ipswich &c.

I do not know when I shall go back to Canon City

I am to write ~~to write~~ for Hayden's Annual Rept a sketch of the botany of our district S. W. Colorado. bringing in distribution of Colorado plants in general With it will be a list of plants that I have found ~~not~~ mentioned in Porter's Synopsis of the Flora of Colorado — If you do not publish a description

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of your M. chrysantha before
that time so that it can be
referred to, would you be willing
to write it for my list ——
And I suppose you would
have no objection to having
in my list Juniperus Utahensis
Englm ined. ——
I have about 200 plants new
to Porter's Synopsis with 13 or more
new species — Dr. Gray has named
my new species this year ——
I have a new Grayia, Dicoria
two new Gilias, a Polygala,
Cleomella &c —— ——
"The plant in the letter I
have sent around as Euphorbia
Parryi — it is quite plenty in the
San Juan Valley
How is Mr. Putnam?

Yours truly,

T. S. Brandegee

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Rec Jan 29
Ans Febr/4

Berlin, Conn,
Jan. 25th 1876

Dr. Geo. Engelmann,

Recvd your letter yesterday and today send a package containing Fendlera rupicola, from the valley of the Animas – Actinella Torreyana – S.W. Colorado
Heliotropium convolvulaceum Colorado and Utah San Juan Valley
Brickellia linifolia, ~~Wats~~ Eaton, King's Rep. S.W. Col –
Orthocarpus purpureo-albus, Rio Mancos.
Dicoria Brandegei – a very small piece
Brickellia microphylla. v. scabra – Mancos Canon
Erythrea
Astragalus jejunus, Watson, King's Rep. Mesa Verde
Artemisia discolor – Animas Valley
Grayia Brandegei, Gray – a branch
Oxytenia acerosa – Dry rivers between Col. & Utah
Cleomella oocarpa – Mancos Valley
Is almost all I have of that Euphorbia
This Euphorbia is common in S.W. Colorado and is the only one I collected – Another Euphorbia which I supposed to be E. petaloidea grew with it on the sandy plains – The specimen will give you a good idea of stems &c.

Dr. Hayden does not wish anything from me until next May and I suppose you will publish the new species ~~yourself before that time~~

The Mentzelia chrysantha opens I should guess about 4 or 5 o'clock in the afternoon, before nuda or ornata

It has a peculiarity of growing upon a bluff side I do not remember ever having seen a specimen except in such a location – it generally maintains a foot hold upon an adobe bluff, that is a bluff of lime and alkaline soil, so steep that it is continually washing away and nothing excepting this Mentzelia grows there. ~~[illegible]~~

Seeds sent to Wm. Thompson, Ipswich, probably of this Mentzelia one plant blossomed the first year, but I am certain it is biennial around Canon City – You wrote once that probably the same species might be annual, biennial &c and I am certain that it is so now – ~~I have no seeds of that Cylindropuntia~~ – – T. S. Brandegee, Jan 1876

I have collected in Colorado some interesting things such as;

Forestiera acuminata, var.
Epipactis gigantea
Oryzopsis asperifolia
Bouteloua eriopoda
" polystachya
Tricuspis pulchella
Andropogon Torreyana
Glossopetalon spinescens
Rhamnus Californicus
Dalea lanata
Peteria scoparia
Peraphyllum ramosissimum
Coleogyne ramosissima
Cowania Mexicana
Tillaea Drummondii
Berberis Fendleri
Cleome Sonorae
Arenaria saxosa
Gilia Gunnisonii
Datura meteloides
Lycium pallidum
Frasera albo-marginata
Atriplex Powelli
Pentstemon linarioides
" Bridgesii
Cordylanthus Kingii
Poliomintha incana
Nama hispida
Wyethia scabra
Encelia microcephala
Schkuhria Neo-Mexicana
" integrifolia
Galium angustifolium
Erigeron stenophyllum
" Bigelovii
Grindelia microcephala
Bigelovia Wrightii

If I have made any mistake with the Euphorbia, let me know and I can send and get another

Yours truly,

T. S. Brandegee

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Rec'd April 26th
Ans May 1

Boulder, Colo.
April, 2[illegible]th

Dr. Geo. Engelmann,

Dear Sir — I have sent you by mail a package of plants according to the enclosed lists.

I think I have not named the places of interesting plants but the localities. — Your descriptions were sent to Dr. Hayden last Saturday and will be printed in the next Bulletin now being printed — Dr. Gray gave the descriptions of six unpublished species, in Latin.

I have not decided what to do during the coming summer.

Yours truly,

T. S. Brandegee

You shall have the copies of the publication when printed.

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Recd. March 6 1876
Ans — 7

Berlin. Conn.
March 3rd.

Dr. Geo. Engelmann,

Dear Sir - I have just returned from a visit to Dr. Gray which I enjoyed very much

By this mail. I send you a plant answering to the enclosed label - perhaps I sent it to you before under the name of J. Bolanderi - which was one of my mistakes — — — ——

I have now about 18 new species for last years work and expect more ——

Euphorbia flagelliformis looks different from petaloidea and that was the reason I collected it — it never is "petaloid" and is easily distinguishable from petaloidea at the first glance - It is very common in the Valley of the San Juan and barely enters the limits of Colorado — There is not much to be said about S. W. Col. oaks — down to 8000 & 7000 ft, the oak is — var. Gunnisoni, below that altitude oak bushes are rarely seen

Sometimes now and then a
few bushes about one foot high
were seen bearing leaves twice as
large as those small acute lobed leaves that
grow near the Arkansas Canon
The acuteness of the lobes was
intermediate between the var.
Gunnisonii & var Emoryi. – They bore
more resemblance to Gunnisonii
than any other form

The vicinity of Canon City is the
most interesting Oak locality of
Colorado & I am glad that
you have seen it

S.W. Col. compared with the rest
of Colorado is remarkable for
the abundance of Shrubby Rosaceae
and Annual Eriogonea
Of Rosaceous Shrubs we have
Crataegus coccinea, Rubus ~~oot~~nutkanus
Pyrus sambucifolia, Prunus
demissa – Peraphyllum, Cowania
Coleogyne, Amelanchier – most of
them very abundant ———

The Annual Eriogonea number
9 species, against 2 in the Arkansas
Valley and one in northern

Colorado — There is very little if any difference in the alpine flora of the different latitudes and only slight differences in the sub alpine floras throughout Colorado

"The lower the altitude the greater the difference between floras of the natural divisions of Colorado,"

One interesting fact I believe I have not mentioned to you that is finding Plantago major, indigenous on the Dolores and Mancos - Indian Reservations — It has not yet been introduced upon the eastern slope

Yours truly,

T. S. Brandegee

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Rec' March 16th
Ans —— 1876

Berlin, Conn.
March, 13th

Dr. Geo. Engelmann

Dear Sir, The plant I sent you as Atragalus jejunus has had its name changed and is now known as Astgr. humillimus n.sp. Watson. You will remember the Galium I sent to you in a letter soon after my return to Canon City which you thought was G. Californicum It is a prostrate species, lying flat upon the ground and rooting from the joints — Dr. Gray has named it Galium Brandegei — I have four or five new species of Astralus: humillimus, Haydenianus, subcompressus, Pattersoni and one in fruit only —— I have now 20 new species and expect some others — My small collection has turned out very well. One in less than 10 has proved to be new — I am quite pleased with my success in spite of the tripod and mercurial barometer which I carried all summer.

As soon as you are willing, I should like the Mentzelia and Euphorbia Mss. Two weeks ago I went to Cambridge and had the pleasure of spending an afternoon with Dr. Gray.

I hope to go out with Hayden again this year, but no one can tell what a President-making Congress may do.

Yours truly,
T. S. Brandegee

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Missouri Botanical Garden

Rec Jan 15
ans same day

Canon City, Jan. 10. 1877

Dr. Geo. Engelmann

Dear Sir, It is a long time since I have written to you. You will see that I am once more again in my old place. I returned in Oct. too late to do very much botanizing excepting with mosses & hepaticae — However I have found quite a number of new species of mosses —

Along the line of the Atchison & Topeka in Colorado I found a Euphorbia which has remained neglected until to-day — I can not make it out, so I send it to you with one from Canon (1873) which I find unnamed in my collection. How is Mr. Putnam? I have heard nothing from him for a year or more. Remember me to Mrs. Engelmann and hoping to hear again from you

I remain Yours truly

T. S. Brandegee

Euphorbia serpens, two forms

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Rec' Jun 13
Ans same day

Canon City, Colo.
Dr. Geo. Engelmann June 8, 1877

Dear Sir,

Yesterday, I visited my tree of Arceuthobium and collected, I think, good specimens, I found male flowers in abundance and send you to day as many as I think you will care to have —

At that locality, 6 or 8 trees are growing Arceuthobium and on each tree, I found both male and female plants, intermingled in about an even ratio — It seems to be only upon comparatively young trees and mostly very young ones, those twice or three times my height

The locality is in the range south from town, up a creek known as Mill Ck two miles, making it distant from Canon City about 7 miles. I keep a good look out for Coniferae parasites but have been unable to detect any with the exception of this locality

MISS
GEORGE ENGELMANN PAPERS

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Rec Sept 21st
ans same day

Sept. 11th 1877
Camp on the [illegible]
Sierra Sangre de Cristo
11,000 ft. alt.

MISSOURI BOTANI
GEORGE ENGELMANN PAPERS

Dr. Geo. Engelmann

Your letter has been forwarded to me from Canon. I am up here all ready to collect seeds of Abies for Mr. Sargent. I am to try to collect 50 lbs. of clean seed of A. Douglasii — 10 of A. concolor — 20 of A. Engelmanni and I have a party up on Poncho Ck, near Mt. Ouray who will collect 10 lbs of A. Menziesii — I shall also collect some little A. Menziesii here and expect to begin with this species next Tuesday. When I shall have finished, I may write to ~~[illegible]~~ items of interest concerning Coniferae. I have not been in Canon since the day of Dr. Gray & Hooker's visit, excepting two or three days preparing to depart again. I spent three weeks or more upon the slopes of Mt Ouray & Shavano, and was very successful in my botanical

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collections (although I have not examined them carefully). My business was selecting a pass & locating a wagon road. Three trees of A. concolor grow up the northern slope of Puncho Pass — I have had no chance to attend to Canon City Oaks — Plums did not fruit this year in any quantity & insects destroyed most of the few that began to grow. I have good flowering specimens collected this year I think there may be two species of plum in the Arkansas Valley. I have tried to collect both & will send this winter to you & will do the best I can about Oaks & plum stones when I return ——

This location has growing about it all the Coniferae of Colorado, excepting Juniperus Virginiana & occidentalis & Pinus edulis — And they can all be found growing together — At one Place a large tree of A. concolor and A. grandis grow within 10 feet of one another, while within 500 ft grow Pinus flexilis, aristata, contorta ponderosa, Abies Menziesii, Engelmanni Douglasii & J. communis ——

A. concolor is the predominant conifer and runs up to 11,000 ft. All coniferae are in as good fruit as they ever are. Cones of A. concolor are very large here and of all colors between a light yellow green to a dark purple (A. grandis cone color & darker) It fruits much more abundantly than grandis, has larger cones. Its rough bark at once distinguishes it from the smooth barked grandis. A grandis has a bark on medium sized trees not unlike that of the large aspens — I will try to collect good specimens of chips & leaves of both species before I go to Canon. A. concolor on some trees has

commenced to turn brown so I
went [illegible] there. It [illegible] last
week. P. flexilis dropped its seed
between Sept 8 & 14th rather sud-
denly – They were very green on the cones
8th. I did not see them again till the
14th when they were dry & seed all
gone except a few (one to a cone)
The seeds are dark colored as
in A. Menziesii & Engelmanni
Pinus ponderosa is leaf bearing
persistent for 6 or 7 years growth
A. concolor 12 to 13 —— do.
P. ponderosa is very common
around by Canon City —
Some localities 1/2 the cones
have it growing upon them
I have seen some trees of A.
Engelmanni bearing cones scattered
all over the tree like Douglasii
A. concolor quite often bears
its cones scattered 1/2 down the
tree. Yours Truly,
T. S. Brandegee

(Will be in Canon by Oct 15)

Recd Oct 17
Ans same day

Canon City, Oct 14,
1877

Dr. Geo. Engelmann,

Dear Sir, You letter and postal card reached me when in camp and busy and had not time to answer but now, once again under a roof, I will try to write you a long interesting letter — First I will answer the questions on your postal card. I chopped some fruiting trees of A. concolor in order to determine their youthfulness and found one 38 years old — Afterwards I saw one no taller than myself bearing several cones. Counting the yearly growths (I had no axe then) I think it was less than 20 years old. Very small trees of A. lasiocarpa at high altitudes I was obliged to reach down for the cones. I find a long & a short leaved variety of A. lasiocarpa — the short leaved, with many upward growing leaves imitating the similar variety of Concolor —

Concolor at higher altitudes has a whiter & smoother bark but is easily distinguished from its companion A. lasiocarpa by it ridged bark at base of trees its longer falcate leaves, its broader habit & more numerous cones. I made a mistake when I said the cones of Concolor are of all colors &c. — they are of two colors either apple-green or plum blue When in heaps the blue ones looked exactly the color (bloom & all) of the old fashioned blue plum

Not one quarter of the concolor trees bore fruit. The pubescence of the branchlets is variable. In some trees they are quite smooth. Heart wood of both species slightly darker. I can not associate the different colored cones with any variety of leaf or with any locality. We collected more light colored cones, I think because they were more easily seen

Concolor is apt to branch at the top and not to grow from a single terminal bud. A. lasiocarpa grows up like a needle. Conifers are larger on the western slope of the Rocky Mts. than up on the eastern. We chopped 50 trees of Concolor — I think they will average a pound or more of seed to a tree. Cones begin to break up Sept. 20th. In all Coniferae. Small trees mature first. Concolor cones break away from the tip first. The axis is persistent one year at least. When the cones is broken from the tree it generally brings the branchlet with it. Sometimes trees bear cones down as far as the middle of the tree. The cones are covered with pitch &c. They are stung by insects sometimes but not so much as those of A. Douglasii but more than A. Eng. & Meng. The leaves are persistent 12 & 13 years!!! that is I find leaves growing upon wood that old and in all our species of Abies

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the leaves are persistent 12 & 13 years; I have counted the rings upon the section of the branch and the yearly growths many times and it is always the same. Concolor in young trees make a definite growth and the next year grows from the terminal end and sends out a shoot each way laterally, thus forming a regularally shaped tree. Douglasii sends out shoots along the yearly growths and it is difficult to determine its age from its branches. Menziesii is more regular & stiffer than Eng. for the same reason. P. ponderosa has a regular way of forming branches and its age can be easily followed up. but with flexilis this can not be done – I think the Opuntias can be traced to the birth year in the same way. Now for A. Engelmanni & Menziesii. We cut 200 trees of Engelmannii in the same range that Drs. Gray & Hooker examined them and I have examined many more carefully & think they are distinct species

Abies Eng. & Menz. 4 2 | 23 3rd — cut 200 or m
and examined carefully

Engelmanni is a very variable species, Menziesii is more constant in its characters but there is not a tree that I have seen belonging to these two species that I could not certainly call either one or the other.

I saw no A. Menziesii growing on ridges – Sometimes it grows up on the slopes but always it is near water or in damp situations. Perhaps Drs. G & H. saw only vars. of Eng. It may be a question whether A. Menz. grows down there. It is a rare tree in the Sangre de Cristo. There ~~(are)~~ were only 40 trees on the head of Grape Ck. I saw none 6 miles south and north none can be found for 30 miles. on Brush Ck where about 50 grow. Mr. Watson says in Kings Rept. that A. M & E. can at at once be distinguished from one another by the pubescent branchlets – That is not true in the Sangre de Cristo. When I first began chopping I did not know what to make of it when A. Eng.

came down with smooth shining branchlets but I overcame the difficulty by concluding that Mr. Watson was wrong. The lower altitude undoubted A. Engelmanni has either smooth & shiny branchlets or pubescent branchlets with gradations between. Menziesii rarely (but it does sometimes) shows a tendency to become pubescent. A. Eng. comes down to the altitude of Menz. but M. never goes up to the altitude of Engelmanni. A. Eng. matures it fruit 7 to 10 days earlier A. Menz. its cones open wider, are generally darker colored and always smaller.

Eng. varies very much in the size and color of its cones – they are from 1 inch to 3 in length, from purple to Menz. cone in color. In green cones the scales are either closely appressed or spreading at their tips. Menz. has cones of one color, long turnip shaped in form and tips of scales in green cones free. The wing of seed in Eng. is also variable in color and not so in Menz. The bark always remains a good distinction and the form of the tree especially of old trees. Menz. bears twice as much fruit as Eng. You can not always determine in young trees the species by form & rigidity of leaves. We, when picking cones always cut the top off after having chopped the trees and then handled the top – in that we found a pleasant difference between M. & E. —
E. at high altitudes has alway pubescent branchlets. Cones of E. & I believe M. open first at tip on the tree and at the base when in heaps

I have seen two trees of Menziesii with bark red upon one side & gray upon the other. I found next to no old cones, showing that they did not fruit last year. I have not calculated it carefully yet, but think picked-out-for-paying-trees of Eng. give 1/4 lb. of seed — of M. give 1/2 lb. of seed

A. Douglasii bore last year — We chopped 80 trees and with three exceptions they fell towards the East — of the three exceptions, two were small and we pushed them west & one by its crooked trunk was so out of balance that it was obliged to fall westward. The cones are on the east side of the tree. On west slope the trees fell up hill We did not like to have them fall on the cones but they would do it. About 1/2 the cones are spoiled by insects. Eng. cones at high alt. are [illegible] a fungus which I will send to Prof. Peck — Pinus flexilis, leaves persistent ? to 4 years — P. ponderosa 6 - 7 years P. contorta 7 years & cones forever P. aristata, leaves 12 to 13 years Juniperus occidentalis rarely is in fruit this year. A. Douglasii sparingly and only in some localities. They do (Abies) bear two consequitive years.

T. S. Brandegee

I have chips, bark, top & bottom leaves
& branches, of all the Crestone Coniferae
cones & fruit also. A. E. & M.
in their variations are well represented
Would you like specimens
I have a large collection of all
sorts of things which will take
me a long time work over.

The Botanic Gazette wishes
me to send them some notes &c, so
perhaps I may condense my
Abies observations & send them

Arceuthobium robustum grows
only upon P. ponderosa, no matter
if its braches are entwined with
other species of Pinus or Abies
the Arceuthobium is only on P. pond.
P. pond. opens it cones first at
the base. begins to open Oct 1st.

The Pinon crop is very large

Juniperus communis is full of berries. I collected several Gentians that I do not know Artemisia Parryi, An Adoxa; with flowers in 6 & 3, which send out subterranean shoots forming bulbs at their tips - It grows far under shelving rocks. I have not looked at it carefully yet Saw Gentiana frigida (I have specimens in Lat, 38. Have a great number of leaf inhabiting fungi & some fresh water algae — Have plenty of Bigelovia Bigelovii. I have no Euphorbias but a few Junci mostly alpine. Something new ought to turn up amongst my collection of the higher plants If you wish anything of these will try & send sometime

Yours Truly

T. S. Brandegee

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Rec Nov 10th
ans Febr 14

Canon City, Nov. 5

Dr. Geo. Engelman

Dear Sir. I have been so busy lately that I have not been able to do much botanical work

I send you some things that trouble me

The Euphorbia is common about here - I had called it E. Fendleri but I dont think it answers the description quite

Artemisia Parryi is common in the Crestones

The Ranunculus was also quite plenty on Mt. Ouray - it does not look anything like R. Adoneus

I will have sent East about 150 lbs. of Coniferae seed. T. S. Brandegee

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Recd March 6
Ans — 7

Cañon City, Col.
March 2nd 1878

Dr. Geo. Engelmann

Dear Sir, Sometime ago I recd. your papers upon Abies, Juniperus &c. and a few days ago some letters. Yesterday I sent Mr. Henry Shaw some cuttings of Populus monilifera and angustifolia and to-day send you some specimens of Arceuthobium robustum and P. monilifera.

My male specimens seem to be good - they are from the same collection as those before sent. Those marked Crestones were collected in Sept on the Crestones. I have not been able to meet with the parasite of P. contorta and would like a little bit if you have any to spare.

The cones of A. concolor are one of

two colors; either apple green or plum blue - no intermediate shades

The wood of Juniperus occidentalis split *very much* more easily than that of J. Virginiana. J. occidentalis when it chopped up for stoves, splinters into small slivers. In the first part of the winter, I sent you a Juncus and Saxifraga. I am not certain about either of them yet. You will find the Juncus in this letter. The Ranunculus sent is R. adoneus.

A new grass has come to light and will be named Melica Hallii or Brandegei - Vasey. Next summer I expect Dr. Hayden will send me west, to the boundary between Colorado and Utah, collecting plants for Dr. Gray. If I go you must let me know what you wish me to look after and collect. I hope Dr. Hayden will send me so that I can make large collections.

Our winter has been very warm and pleasant - we have had no snow in Canon yet and I think not a single cloudy day all through the winter months.

Townsendia sericea was in blossom Feb. 14.

If the cottonwood cuttings are not satisfactory, I can easily send more.

Yours truly,

T. S. Brandegee

ATCHISON, TOPEKA & SANTA FE RAILROAD CO.

A. T. & S. F....	470.58
P. & A. V......	148.72
K. C. T. & W...	66.32
P. H. & De S...	44.89
F. E. & W. V...	29.32
W. & S. W.....	27.28
Total........	787.11

ENGINEERING DEPARTMENT.

A. A. ROBINSON,
Chief Engineer.

Rec'd Dec 5th

Canon of the Arkansas
Dec. 1st — 1878

Dr. Geo. Engelmann

B

Dear Sir. I was very glad to hear from you again – I have not been able to go where I wished this summer but have been hard at work for the A. T. & S. F. R.R. – During April I was out on the plains between La Junta and Trinidad and since that time have been in the Arkansas Canon between Canon City and South Arkansas. As I have been upon my old botanizing grounds, I have not collected very much but I have found some things, which may be interesting when they come to be looked over

I have seen no Picea pungens this year excepting upon the Denver & South Park Ry. in Platte Canon and it was in fine fruit The same tree does may mature fruit two consecutive years – A. Douglasii was in fruit this year on the Sangre de Cristo, I have seen P^{ca} pungens growing between 9000 & 10000 ft. altitude and as far south as the South Fork of the Rio Grande. I am not certain that I have seen it upon the "western slope" — I expect to be in this Canon until March or April and do not know what may then be done —

Yours truly,

T. S. Brandegee

what I wrote about Sangre de Cristo Coniferae, was published in the Botanical Gazette about last June

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Rec/ June 27

ATCHISON, TOPEKA & SANTA FÉ RAILROAD CO.

ENGINEERING DEPARTMENT.

A. A. ROBINSON,
Chief Engineer.

A. T. & S. F.	470.58
LEASED LINES.	
K. C. T. & W.	66.32
P. H. & De S.	44.89
F. E. & W. V.	29.32
W. & S. W.	27.28
P. & A. V.	245.26
N. M. & S. P.	14.69
D. & R. G.	336.70
Total	1,235.04

Canon of the Arkansas
June 23rd 1879

Dr. Geo. Englemann,

Dear Sir, I was very glad to hear from you again. I am working for the A. T. & S. F. R. R. and have been stationed here since last July, but the division is now finished and the cars running over it. In a few days I expect to be sent to some other place, perhaps New Mexico. In the Sangre de Cristo, where I am best acquainted with ~~the~~ A. subalpina and concolor A concolor has a rough bark and A. subalpina a smooth bark – Large trees of A. subalpina have a rough bark but not as rough as those of A. concolor; it is more scaly. The trunk of medium sized A. subalpina resembles in color that of the aspens. I have collected three new species of lichens this year and three new species of fungi one is upon Juniperus occidentalis = Gymnosporangium speciosum, Pk.

Sympathizing with you in your troubles
I remain, Yours truly,

T. S. Brandegee

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Rec Nov 10th
An — 10

Cañoncito, Santa Fe. Co.
New Mexico

Nov. 6th. 1879

Ech. [illegible]

Dr. Geo. Engelmann

Dear Sir, I am now stationed fifteen miles south from Santa Fe and have been in this camp about three months. In August I was on the move and am pretty well acquainted with the country between Santa Fe and Las Vegas. I suppose that I have been over the ground of Fendler and Wright. I have sent you a specimen of an Opuntia given to me — it grows along the Rio Grande down by San Domingo. If you know it, I should very much like to have its name. This summer I have not seen any strange cactus. Some plants interesting to you are quite common here — Phoradendron juniperinum is very common growing upon both J. occidentalis and Virginiana. It was in fine fruit about the last of October. Arceuthobium divaricatum is plenty in some places and now and then I see Arceuthobium upon Pinus ponderosa. The only coniferae are Pinus ponderosa and edulis — Abies Douglasii and the two junipers. I have seen no oaks that do not grow near the Grand Canon of the Arkansas. The flora here is mostly that of Southern Colorado. The altitude is between six and seven thousand feet This Division is to be finished early in December and then I will be in some other place — I have carried my portfolio along with me and have found some plants that are additions to my herbarium. Plantago major is here about springs and in dark canons and I am now certain that it came up into Southern Utah from Mexico and perhaps Spain I have never seen it in Eastern Colorado Anything in the botanical line, from this camp that I can do for you, I will be much pleased to do

Yours truly
T. S. Brandegee
N. M. and S. P. R.R.
Cañoncito
New Mexico

Rec Jun 12th
[illegible]

June 8th 1880

have sent it

Dr. Geo. Engelmann

Dear Sir. Of course I should very much like to have your revision of Pinus. My P.O. will probably be Alpine, Chaffee Co. all summer — I am in charge of a division of construction, fourteen miles; my quarters are at 10.000 ft altitude. Yesterday I was above timber line — but few flowers are in blossom up there yet — Primula angustifolia, Thlaspi alpestre and Geum Rossii are the first comers — Lower down I have seen Gentiana humilis in blossom — It does not seem right to see Gentians in blossom with the willows. Pinus contorta is very common here and I can see no use for its serotinus cones except to furnish food for squirrels in hard times. Mr. Sargent means to come to Colorado and I hope to see him. Picea pungens at its highest altitude in this locality has a very red bark and decidedly scaley — the bark is as red as that of P. Engelmanni but is more ridged. — Nevertheless the species can easily be distinguished

Did you ever notice how white and smooth the bark of P. Engelmanni sometimes is — at timber line — With trees a foot and more in diameter, the whole trunk is as white and smooth as that of Abies sub-alpina. Phoradendron juniperinum was plenty between Las Vegas and Santa Fe — I never saw it in blossom

Yours truly,

T. S. Brandegee
Alpine
Chaffee Co
Colorado

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Rec- March 21

St. Elmo,
Chaffee Co,
Colorado
March 16th 1881

Dr. Geo. Engelmann,

Dear Sir, Sometime ago I recvd. a letter from you forwarded from Alpine. Since then I have been down to Cañon City on a visit and from that place ~~forwarded~~ sent to you all the specimens of A. concolor that I had. Here at St. Elmo where I have lived for the past year the elevation is 10.000 – no A. concolor grows in this vicinity. Pinus contorta and Picea Engelmanni make ~~the surrounding forest – The Arceuthobium~~ upon P. contorta did not blossom in the fall, but I suppose will next spring as it did last spring. Soon I expect to go to Gunnison City and spend next summer in that western region with a locating party. If ever you wish to write to me direct to Cañon City and everything will be forwarded. Your revision of Pinus reached me safe and I am very much obliged – Last year, my botanical excursions were among the alpine flora of the Sawatch Range, but I do not have much time now-a-days for that enjoyment

Yours truly,
T. S. Brandegee

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Recd Sept. 23d
Ans. same day

Camp Mt. Marcellina
Sept. 17. 1881

Dr. Geo. Engelmann

Dear Sir. I am very sorry that I could not have been at Cañon City while you were there. I have spent most of the Summer on the Ute Reservation about the head of Anthracite Ck at high elevations, 8 to 10 thousand - too high for Mentzelia, Euphorbia, Asclepias &c. I have collected specimens of every thing I did not recognize and have quite a good sized collection. The few plants that have been named show additions to the Colorado Flora of Utah Plants. I enclose an onion (Allium Brandegei Watson) I have but one specimen left having a bulb or I can find but one but think there are others somewhere and when found will send you a better specimen. I do not know Isoetes but think the enclosed plants must be it. One lake at 10.000 ft. alt, ten acres in extent has it's bottom covered with it. Monday I start out to run a rapid preliminary line to Coal Ck, a small creek emptying into Anthracite near the North Fork of the Gunnison

Yours truly
T. S. Brandegee
Irwin
Colo.

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Rec Nov 21
Ans same day

Coal Ck. Canon,
Colorado,
Nov. 13th 1881

Dr. Geo. Engelmann,

Dear Sir, Your letter of the First has been recv'd. I knew that only one gender of Arceuthobium Doug. was collected, but I could not find the females. In one certain gulch there is plenty of it, and all males, perhaps the females might have been in the higher part of the trees. It generally grows on branchlets three to four years old but not always. One collection of a dozen or more plants I remember growing on a limb three inches in diameter. The second attempt at getting Isoetes was a failure — the ice was broken and some dried Junci were fished up and brought to me. The bottom of that lake is nearly covered with Isoetes and how it could have been missed is a mystery. Scattered over the region, I have been working in this summer are half a dozen small lakes, and each one of the lakes has some species growing in or about it new to Colo. Flora and not found in the other lakes. One is filled with Isoetes and fringed with Potentilla palustris — another green with Menyanthes, another with a Lemna, another covered with a floating Myriophyllum, one is the home of Alisma &c. I enclose a plant which I think has not yet been sent East by me — perhaps it is an apetalous Arenaria, it is common covering the damp ground in some places for quite an area — alt. 8000 to 10,000 (over)

I have been too high this year for Euphorbia and so of course have not seen E. flagelliformis

It is winter here now and this out-of-doors life is not pleasant — disagreeable on account of the cold and the botanical pleasure mostly gone since the arrival of snow

Yours truly,
T. S. Brandegee
Irwin
D. S. P. & P. R.R. Colorado

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Rec Dec 16
Ans — 18

Dec. 13th 1882

Berlin
Conn.

Dr. Geo. Engelmann,
St. Louis
Mo.

Dear Sir, I recvd. your postal card before leaving Washington Terr. I enclose some specimens of Isoetes collected late in the season in the lakes of the Cascade Mts. The species grows submerged

You have not sent me your Revision of Isoetes and if there is one to be spared, I would be very glad to have it

I am working at my summer's collection and find plenty to do.

Yours truly
T. S. Brandegee

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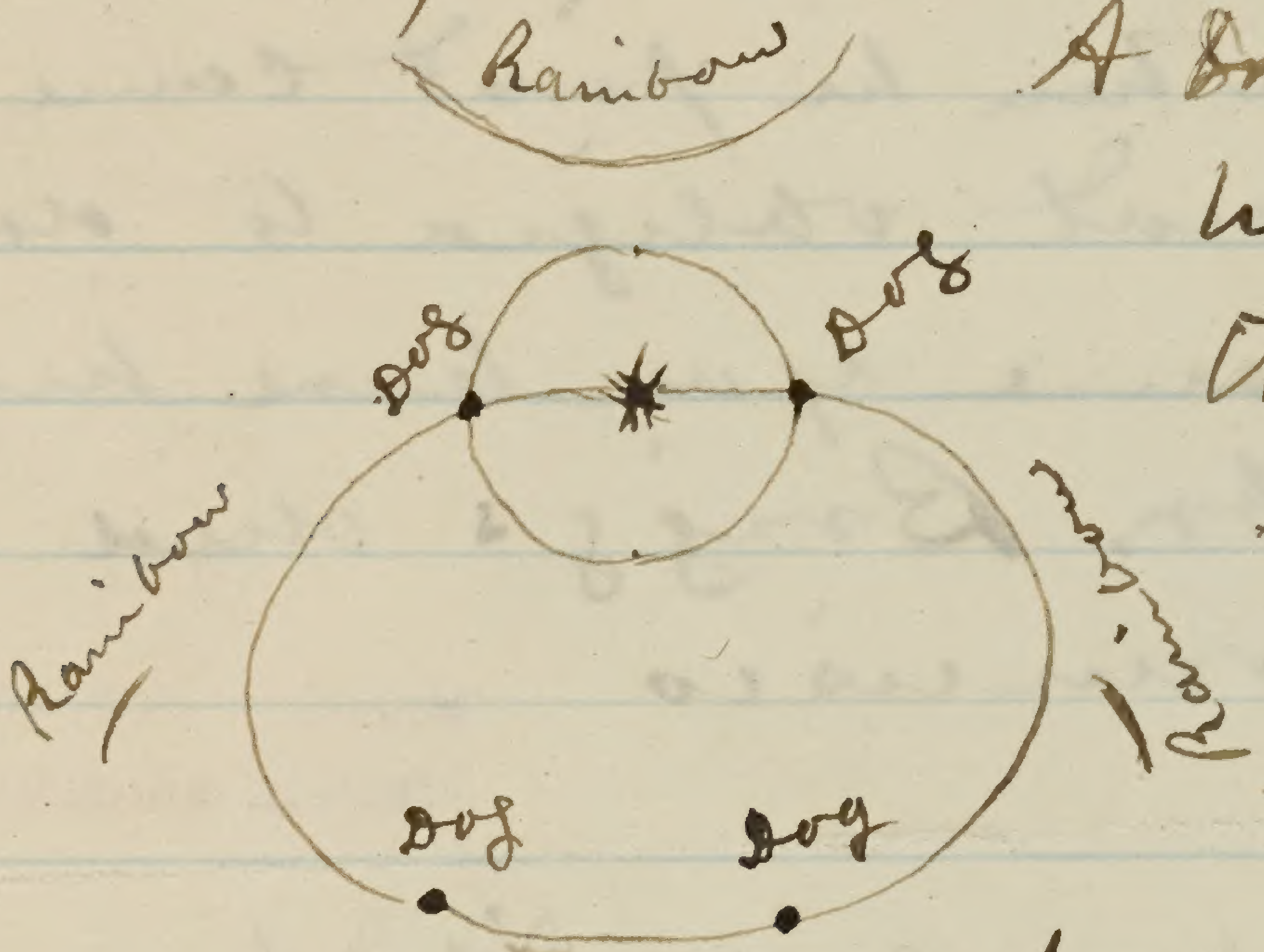
Perhaps this may give you an idea of the display — Time 10 A. M.



A small bright halo around the Sun — Nearest the Zenith a bright rain=bow, in the po=sition I have drawn it, of about 1/3 of a circle a horizontal (halo.) (circle) passing through the Sun with 'dogs' at the intersections with the small halo and also dogs 180° from the intersection 'dogs' and two ends of a rainbow on the horizon, about 45° horizontally from the Sun, north & South —— Mr. Putnam seems to be well. I walked up to the Soda Spring with him yesterday but he was obliged to rest on the road up and on the road back – When he first came here he was not obliged to do so

I presume you have heard ~~that~~ Dr. Briggs died in San Francisco

I am very sorry if I have written too long a letter

Wishing to be remembered to Mrs. Engelmann

I remain

Yours truly
T. S. Brandegee

Jan 16th